

## AGRUMAR SOUSS

### Morocco

Consultation on development of climate change adaptation strategies for companies



Facing the impacts of climate change is a key challenge of this century - not only for governments and communities, but also for businesses. Rising prices for raw material, energy and water, damages of transport routes, or more frequent gaps in the supply of goods - businesses and in particular SMEs are now facing increased climate-related risks. At the same time climate change offers them a range of business opportunities.

This case study was developed under the GIZ global programme "Private Sector Adaptation to Climate Change (PSACC)" which aims at building the capacities of SMEs and the private sector in the field of Climate Change Adaptation. GIZ developed the climate risk management tool "Climate Expert" ([www.climate-expert.org](http://www.climate-expert.org)). Climate risk management tools provide information for SMEs to build adaptation capacity and to develop individual adaptation strategies. In addition to assessing vulnerabilities, the tool includes guidance on assessing the costs and benefits of the different climate risk management options.

### About the company

AGRUMAR SOUSS is a citrus processing and export cooperative founded in 1980. The processing and packing units are located since 1983 in the industrial zone of Ait Melloul, 20 km away from Agadir harbor. The export citrus are mostly cultivated in the Souss-Massa and 20% are coming from the norther regions of Marrakech-Safi and Béni-Mellal-Khénifra. They are exported at 40-50% to Russia so as to the USA, Canada, EU, United Kingdom and Saudi Arabia.

<b>Location</b>	Souss-Massa Region Industrial Zone Ait Melloul in the locality of Agadir
<b>Sector</b>	Agro processing and export company
<b>Products</b>	Packed citrus fruits according to different export norms
<b>Company size</b>	Turnover: 13 mio EUR Employees: 64 full time; 305 seasonal



Picture credit: adelphi, production site

### How is the company affected by climate change?

Given the geographic location as well as the vulnerability of the citrus fruits sector, the exposure of the company to climate change is high. Rising temperatures, erratic and heavy rainfalls, as well as more frequent heat waves, severe droughts and strong Chergui wind and late frost belong to the most pressing climate phenomena which have negative effects on the business operations. Through its dependence on the local citrus fruit production, climate change is putting the company's supply chain at risk. Agrumar Souss had already to deal with reduced amount of raw material and damaged fruits. Citrus trees are particularly vulnerable to heat waves and water-stress what decrease the productivity and the quality of the fruits and of the trees. During the heat waves of May to July 2015 and 2016 30% to 40% of the Souss Massa citrus blossom dropped. The company also experienced floods within its storage facility during the heavy rainfalls of November 2014 which damaged its stocks of packaging.

### Key climate phenomena

The effects of climate change are more and more present in Morocco, which has been identified as very vulnerable country to climate change by the 4<sup>th</sup> IPCC Assessment Report. Morocco and particularly the Souss-Massa as semi-arid coastal region are affected by increase of average temperatures, changing rainfall patterns and the sea level rise. Extreme climate events e.g. droughts, floodings and heat waves have become more and more frequent and intense. These changes have an important impact on the country's water resources, agricultural production and fishery and marine ecosystems. The company activities and Souss-Massa's economy based on agriculture are particularly sensible to those changes.

## Climate risks and adaptation measures

Climate Phenomenon and Impacts	Climate Risks	Identified adaptation measures
<b>Decrease of mean rainfall and frequent droughts</b>	<ul style="list-style-type: none"> <li>• High rise of irrigation costs</li> <li>• Fruits are too small according to the international export norms</li> <li>• Decrease of groundwater level</li> <li>• More restrictive water and energy regulation what leads to higher production costs</li> </ul>	<ul style="list-style-type: none"> <li>• Use of solar pumping for water pumping and irrigation</li> <li>• Sustainable water management system with valorization of irrigation water</li> <li>• Capacity-building for fruit producers on the different irrigation systems</li> <li>• Integrating energy efficient measures in the production processes</li> <li>• Become part of the regulation organisation for citrus exports and control of fruits quality</li> </ul>
<b>Heavy and more frequent rains</b>	<ul style="list-style-type: none"> <li>• Stocks of finished products under water</li> <li>• Sewage backup into the stocks and production units</li> <li>• Decreasing quality of small citrus as clementine</li> <li>• Delayed supply of fruits</li> </ul>	<ul style="list-style-type: none"> <li>• Use of an anti-back flow system for rainfalls</li> <li>• Strategic inventorial management</li> <li>• Lifting elevation of stocking areas</li> <li>• Improving water drainage capacity of open spaces (with rainwater drainage as gravel pavers, natural or planned herbal trench)</li> </ul>
<b>Heat waves, Chergui and other strong winds</b>	<ul style="list-style-type: none"> <li>• Decreasing quantity and quality of produced fruits</li> <li>• High fruit and blossoms drops in May – June</li> <li>• Branches breaking</li> <li>• Loss of Navel varieties because of mottle virus</li> </ul>	<ul style="list-style-type: none"> <li>• Renewal and strengthened of windbreaks in the orchards to reduce the trees' exposition to strong winds</li> <li>• Exchanges and awareness campaign on good practices for the citrus agriculture (on resistant root-stocks to extreme weather events, maintaining of soil humidity, researches...)</li> <li>• Realization of feasibility study on adaptation measures to heat waves in citrus orchards (ex: misting system)</li> </ul>
<b>Other cross-cutting and climate change related risks</b>		<b>Identified adaptation measures</b>
<ul style="list-style-type: none"> <li>• Stricter regulations on environmental/climate related issues</li> <li>• Higher constraints and requirements from international clients and banks on climate and environmental issues</li> </ul>		<ul style="list-style-type: none"> <li>• Development of a CSR strategy particularly with CCA aspects</li> <li>• Subscription to multi-risks climatic insurance by all cooperative producers</li> </ul>

## Business opportunities

- Decrease production costs through the investment in water and energy efficient measures
- Production and export of new fruit varieties that are more resistant to climate extremes

## For more information on this case study and PSACC, contact us

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